

REMARKS

Claims 47-62 are pending in the present application. Claims 47-51 and 57-62 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over various claims of US Patent No. 6,392,488. Claims 52-56 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over various claims of US Patent No. 6,392,488 in view of Vernon 6,188,274. Claims 47-62 have been rejected under § 103 as being unpatentable over Koinuma 4,451,802 (Koinuma) in view of King 6,300,827 (King), Engbretson 5,311,150 (Engbretson), Dudley et al. 5,144,133 (Dudley) and Mandelman et al. 6,355,531 (Mandelman).

Claim 57 has been amended to delete "the steps of." Claim 58 was amended to conform to amended claim 57. The amendments to claims 57 and 58 were not made in response to any rejection, but to make the claims more clear.

RCE

The present Amendment is being submitted with an RCE, and the corresponding government fee.

TERMINAL DISCLAIMER

In response to the double patenting rejections, a Terminal Disclaimer and the corresponding fee are being submitted with this Amendment. Applicants submit that the Terminal Disclaimer overcomes the double patenting rejections.

IDS

An IDS is being submitted with this Amendment. Applicants request that the Examiner consider the references cited in the IDS.

Prior Art Rejections

As mentioned above, claims 47-62 have been rejected under § 103 as being unpatentable over Koinuma in view of King, Engbretson, Dudley and Mandelman. The Examiner has taken the position that it would have been obvious to combine the teachings of these 5 references, and that such a combination makes the claims unpatentable. In the Office Action, it is alleged that the claimed invention is made unpatentable by the combination of Koinuma (a power amplifier having multiple stages), King (a power amplifier for a wireless transmission system), Engbretson (a FET), Dudley (CMOS), and Mandelman (a semiconductor having different oxide layers). Note that, while Applicants believe that Mandelman is not legal prior art, Applicants believe that the claims are not unpatentable over Mandelman anyway.

Claim 47 recites a dual gate oxide CMOS RF power amplifier for a wireless transmission system including "RF power amplifier input stage circuitry including devices with a first gate oxide thickness," "RF power amplifier output stage circuitry having devices with a second gate oxide thickness," and "wherein the first gate oxide thickness is less than the second gate oxide thickness."

There is no suggestion or motivation in the 5 references to combine the teachings of the references as outlined in the Office Action. For example, there is nothing in the Koinuma reference to suggest that input and output stage circuitry having devices with different gate oxide thicknesses would be desirable. Also, it seems unlikely that a person having ordinary skilled the art would look to the audio amplifier described in Koinuma to drive a cellular telephone or wireless communication system, as is suggested in the Office Action.

Although the technology allowing dual gate oxide devices has been available for years, no one has successfully designed an RF power amplifier in CMOS using dual gate oxide

technology, as claimed by the present patent application. Perhaps one reason for this is that for RF designs, it is desirable to use the fastest and most efficient devices possible (e.g., thin gate oxide devices). However, the Applicants have discovered that a functioning RF power amplifier can be designed by using thinner gate oxide devices where a higher breakdown voltage is not required. As stated in the Specification:

"The RF amplifier of the present invention takes advantage of the availability of dual gate oxide devices by selectively choosing certain gate lengths for various components of the amplifier. For example, it has been discovered that for preprocessing circuitry or pre-driver circuitry, a high speed is desirable and breakdown voltage is not as important. Therefore these devices are designed using a thinner gate oxide. For output state devices, where a high breakdown voltage is more important, the devices are designed using a thicker gate oxide." (Specification, Page 28, lines 18-24).

For at least these reasons, applicant asserts that claim 47 is allowable over the prior art. Since dependent claims 48-51 depend from claim 47, it is also believed that these claims are allowable over the prior art.

Claim 52 recites a cellular telephone apparatus including "a transceiver for transmitting and receiving signals," "a complementary metal oxide semiconductor (CMOS) RF power amplifier coupled to the transceiver, the RF power amplifier having input stage circuitry including devices with a first gate oxide thickness and output stage circuitry having devices with a second gate oxide thickness, wherein the first gate oxide thickness is less than the second gate oxide thickness," and "an antenna coupled to the RF power amplifier and the transceiver for transmitting and receiving signals."

For at least the reasons set forth above with respect to claim 47, applicant asserts that claim 52 is allowable over the prior art. Since dependent claims 53-56 depend from claim 52, it is also believed that these claims are allowable over the prior art.

Claim 57 recites a method of providing a CMOS RF power amplifier for a wireless transmission system including "providing an input stage including one or more devices having a first gate oxide thickness," "providing an output stage including a plurality of switching devices having a second gate oxide thickness," and "selecting the thickness of the first and second gate oxides such that the second gate oxide thickness is greater than the first gate oxide thickness."

For at least the reasons set forth above with respect to claim 47, applicant asserts that claim 57 is allowable over the prior art. Since dependent claims 58-62 depend from claim 57, it is also believed that these claims are allowable over the prior art.

Conclusion

It is respectfully submitted that all claims are patentable over the prior art. It is further more respectfully submitted that all other matters have been addressed and remedied and that the application is in form for allowance. Should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Bruce A. Johnson, Applicants' Attorney at 512-301-9900 so that such issues may be resolved as expeditiously as possible.

Respectfully Submitted,



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4/3/06
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